

WHAT WE CLAIM IS:

1. A control signal system in a switch including N ports and a buffer for registering data packets comprising:  
an empty buffer counter for counting how much space said buffer  
5 remains available;  
N port-packet-counters for respectively counting how many said data packets in said buffer are intended to be respectively sent to specific ones of said N ports.
2. The control signal system in a switch as set forth in claim 1, wherein  
10 said buffer stack is a buffer stack comprising a plurality of buffer units therein.
3. The control signal system in a switch as set forth in claim 2, wherein each of said buffer units is to receive and store a data packet sent from network to be sent to a specific port in said switch.
- 15 4. The control signal system in a switch as set forth in claim 1, wherein said control signal system is a flow control signal system for controlling a flux of said data packet to be sent to said specific port.
5. The control signal system in a switch as set forth in claim 4, wherein said flow control signal system further comprises an alarming device  
20 for alarming that said N ports have reached a threshold state.
6. The control signal system in a switch as set forth in claim 5, wherein said alarming device includes N alarm units is for respectively alarming that said N ports reached threshold states.
7. The control signal system in a switch as set forth in claim 6, wherein  
25 said empty buffer counter has a counting value less than a preset threshold value and a specific one of said N port-packets counters has a counting value greater than a threshold value preset therein.

8. The control signal system in a switch as set forth in claim 6, wherein said N alarm units respectively comprises N comparators and N signal generators.
9. The control signal system in a switch as set forth in claim 8, wherein  
5 each of said N comparators sends a triggering message corresponding to said threshold state to respective one of said N signal generators after said alarm units respectively alarms.
10. The control signal system in a switch as set forth in claim 8, wherein  
10 said respective one of said N signal generators is triggered by said triggering message for sending a flow control signal to all said N ports except said specific port.
11. The control signal system in a switch as set forth in claim 1, wherein said N ports are output/input ports to be outputted/inputted said data packets through said N ports
12. A method for controlling data packets transmitted in a control signal  
15 system in a switch having N ports and a buffer therein, comprising steps of:
- (a) sending said data packet to be sent to a specific one of said ports and stored into said buffer into said switch;
  - 20 (b) initiating and controlling a flux of said data packets to be sent to said specific port
  - (c) causing said switch into an alarming an alarming state when said specific port will be overfilled with said data packets;
  - (d) finding another data packet from another port of said N ports to  
25 be sent to said specific port and triggering a triggering message to stop said another port from sending any data packet to said specific port;

(e) going back to step (a) after said alarming state corresponding to said specific port is removed and repeating said step (a) to said step (e) to process said data packets to be sent to said specific port until all data packets in said switch have been processed.

- 5 13. The method as set forth in claim 12, before said step (a), further comprising a step of sending said data packet from a network.
14. The method as set forth in claim 12, wherein said step (b) further comprises a counting sub-step executed by an empty buffer counter disposed in said system for counting how much space said buffer  
10 remains available and one of N port-packet counters for counting how many data packets in said buffer are intended to be sent to said specific port to control said flux.
15. The method as set forth in claim 14, wherein said counting sub-step is to deduct 1 from said empty buffer counter and add 1 to said one  
15 of N port-packet-counters corresponding to said specific port.
16. The method as set forth in claim 16, wherein said counting step is to respectively compute whether said empty buffer counter has a counting value less than a threshold value preset therein and said one of said port-packet-counters has a specific counting value  
20 greater than a specific threshold value preset therein.
17. The method as set forth in claim 12, wherein said alarming state is caused by an alarm device which comprises N alarming units for respectively alarming that respective said N ports have a respective said flux to overfill said respective N ports.
- 25 18. The method as set forth in claim 17, wherein one of said N alarming units alarms that said specific port will be overfilled.

19. The method as set forth in claim 17, wherein said N alarm units respectively comprises of N comparators for triggering said triggering message and N signal generators respectively triggered by said N comparators for respectively sending flow control signals to all said N ports except said specific port.
20. The method as set forth in claim 19, wherein said triggering message is to stop any source end in different network connected with said switch from transmitting said data packets into said switch.
21. The method as set forth in claim 12, before said step (d), further comprising a step of examining said N ports except for said specific port whether there is said another data packet to be sent to said specific port.
22. The method as set forth in claim 21, after said step (c), further comprising a step of sending and storing said another data packet into said buffer.
23. A controlling medium for controlling a transmission of data packets in a flow control signal system in a switch having N ports and a buffer therein comprising:
- a storing means for receiving said data packets from a network to be sent to a specific port and storing in said buffer;
  - a computing means for counting a flux of said data packet to be sent to said specific port;
  - an alarming means for causing an alarming state for preventing said specific port from being overfilled up with said data packets;
  - a triggering means for triggering a message to stop any data packet to be sent to said specific port from being transmitted into said switch; and

a processing means for processing said data packets transmitted to said specific port until all data packets in said switch have been processed.

24. The medium as set forth in claim 23, wherein said control signal  
5 system further comprises respective N alarming units for respectively alarming said switch from being overfilled with said data packets to be sent to said N ports.
25. The medium as set forth in claim 23, wherein said flux in said  
10 computing means is down-counted by an empty buffer counter counting how much space in said buffer remains available and up-counted by one of N port-packet-counters counting how many said data packets in said buffer are intended to be sent to said specific port.
26. The medium as set forth in claim 25, wherein said empty buffer  
15 counter comprises a preset buffer threshold value denoting a minimum safety level for allowing said data packets to be sent to said switch.
27. The medium as set forth in claim 26, wherein said one of N port-  
20 packet counters comprises a respective port threshold value denoting a maximum safety level for allowing of said data packets to be sent to a corresponding one of said N ports.
28. The medium as set forth in claim 27, wherein said alarming state is  
25 established when said empty buffer counts is less than said preset buffer threshold and said one of said N port-packet counters counts is greater than said respective port threshold value.

29. The medium as set forth in claim 23, wherein said message in said triggering means is triggered by another data packet come from a second port in said switch to be sent to said specific port
30. The medium as set forth in claim 29, wherein said message is sent by one of comparators respectively set in said system corresponding to said second port.
31. The medium as set forth in claim 30, wherein said message is to be sent to one of signal generators corresponding to said one of said comparators.

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